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DATA PROVISION AND USE IN LCM: RESPONSIBILITIES OF STAKEHOLDERS CONCERNING ADEQUATE DATA

Martin Baitz, Peter Shonfield*

PE INTERNATIONAL .m.baitz@pe-international.com,

Hauptstr. 111-113, 70771 Leinfelden-Echterdingen, Germany.

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ABSTRACT

Science has no targets, brings up new questions, needs any data, widens results and hates timely decisions. Management approaches have targets, love timely decisions based on relevant data only and aims for continuous improvements. Decision support in business and industry needs to be based on realistic life-cycle-systems and supply-chains, and must support the identification of issues or sensitivities and responsible communication to stakeholders. Adequate selection and use of data is necessary to meet these requirements. Stakeholders in academia, industry and politics may have different data requirements but each has a role to play in provision and use of adequate data to support the whole LCA community. Better understanding of data requirements is essential to determine the adequate kind of data and whether own or background data should be used in different parts of the model. The correct use of adequate data reduces the reputational risk to practitioners and organizations.

INTRODUCTION

No data, no result. Data are the fuel for results. However in LCA we have known for many years that different "planets" of users exist (Klöpffer W, Heinrich AB, 2001); each with different backgrounds but believing that they are talking about the "same" issues and concepts. As a result, professional stakeholders have sought to develop approaches that can reduce misunderstandings and improve credibility (e.g. Rebitzer G, 2001). However, unfortunately the misunderstanding of "thinking to talk about the same issue" between different stakeholders holds still true a decade later, (Baitz M et. al., 2012). Stakeholders all aim to support LCA, but each has a different interpretation of what this means. Three stakeholder groups concerning LCA data provision and use are: 1) industry & business, 2) academia & science, 3) regulative, declarative or political bodies & NGOs. All of the stakeholders use data, some of the stakeholders provide data, fewer stakeholders maintain data and in the end all stakeholders communicate (internal or external) based on data. So data are essential for all stakeholders. But do all stakeholders: have the same goal? Need the same kind of results? Have comparable responsibilities concerning information and data? Need to take critical decisions on data? No! "Adequacy" of data is the "missing link" to enable LCA data to be used in decision support. This develops the first sentence of this paragraph further

into: *No adequate data, no adequate result, no use of LCA results in decision support.* Therefore it is important to understand the different requirements and responsibilities of the different stakeholders in LCÁ.

DATA USE AND PROVISION OF DIFFERENT STAKEHODERS

Political bodies, academia and industry communicate, use, provide and maintain data in different intensity and with different priorities. Table 1 gives a qualitative estimate of the priorities in data work of the stakeholders from the view point of a software and database provider (GaBi, 2013) publishing and re-publishing data for and from any of the stakeholders.

Table 1. Varying priorities and features in the LCA work of different stakeholders

	Political bodies /NGOs	academia / science	Industry / business
External communication on data	core feature	core feature	some
Use of data	some	core feature	core feature
Provision of data	N/A	some	core feature
Maintenance of data	N/A	some	core feature

Communication

Political bodies and NGOs mainly communicate to consumers or regulative bodies aiming for clear, simple, reproducible messages for non-experts. Academia and science (rather) do report (than communicate) into diverse groups of stakeholders, with rather less information that is directly suitable for a broader audience or non-experts. Industry and business communicate mainly just within their organizations or supply chain; sometimes to governmental bodies.

Use

Political bodies use data to quantify policy measures as basis of regulations or to quantify product performance for end users. Academia and science use data to verify and benchmark new scientific methods. Industry and business use data to develop new products, improve their own products and processes and to justify investments or their choice of suppliers.

Provision

Political bodies and NGOs normally do not provide data by themselves. Academia and science do provide data to some extent (mainly LCIA). Industries, businesses and associations see data provision as a core topic (often via associations, sometimes company-specific).

Maintenance

Political bodies and NGOs do not maintain data by themselves. Academia and science does maintain data to some extent (often sporadic). Industries, businesses and associations push for the maintenance of own and background data as a core topic of reliable LCA data.

For a software & database provider consistency, continuity and reliability are core features of technology development, provision and maintenance. The challenge is to manage the different inputs of stakeholders in a way that valuable data can be commercialized while immature or fuzzy data are filtered out. If stakeholders take their responsibility regarding data provision and use this would ensure that more adequate data would be available and confusion about

data “differences” would be reduced. Furthermore, users could more easily assess the quality of data that they use .

BASICS OF RESPONSIBLE DATA PROVISION AND USE

Data provision and use should be understood from any stakeholder as part of the “normal” management cycle: Plan-Do-Check-Act (or, to translate into the LCA data world, maybe: Plan-Implement-Maintain-Review).

In planning of data provision “demand” is the core driver. What data are needed for which purpose? New technologies, regulations, standards or new market regions are decisive.

The core aspects concerning implementation of data are (overall) relevancy, (methodological) consistency and (technical) adequacy. Data implementation needs some LCI experts and many engineering experts to generate adequate (data) results.

Concerning maintenance of data, the frequency, the possibility of auto-updates of own-developed user systems and the proactive update or fade-out of older data is essential.

A “review of the current situation” is closing the loop. Did something change in relation to the plan? Did the world, the industry or the economy change? Further also the “review of data” by suitable parties and the users groups with the related improvement input is a core aspect for the new planning of the next update cycle.

If all stakeholders providing data into the LCA community applies their own management cycle and takes their responsibility seriously, the time taken up by the many odd data or methodological discussions of the past could be put to better use. Responsibility is often not favorite topic for some stakeholders. However the following responsibilities may be considered by different stakeholders (comments are welcome as the goal is to inspire an open discussion):

In most cases political bodies judge, use or communicate data rather than seeing intrinsic value in understanding the background of technical, economic and methodological dynamics behind different data. To exaggerate somewhat: it must be simple and reproducible forever, while also being very reliable. However, making complex structures too simple is often simply wrong and reliability is asking for a certain kind of ability to manage natural change. Nobody can foresee technologies, markets, crisis, inventions and its consequences; even not the best “methodological” invention. Political bodies are well educated to pinpoint facts on paper. However improvements in reality are needed rather than on paper. Political bodies may consider taking more responsibility regarding rules and regulations that actually can be implemented on the basis of existing information systems and knowhow. Further Political bodies may consider promoting or advocating for rules and regulations that are applicable in reasonable time frames, with transition periods and technical background; not only on paper.

Academia and science are also important stakeholders in LCA. Science is using and producing data. In most cases the data is useful for science but less so for management purposes or for broader user groups. Academia may consider taking more responsibility regarding the promotion of data originating from new methods, immature (untested in practice) approaches or one-time-research-projects (like abandoned PhD topics with no follow-up). Key to LCA success is data on realistic supply chains and useful new scientific

methods; not dogmatic or pseudo-revolutionary approaches that can only be interpreted by the inventers. Further, certain schools tend to enlarge systems; fine if the extended system leads to an improvement of the results. It may be also considered to reduce systems to the relevant (the famous "Einstein style") and try to avoid extension of systems with meaningless, coarsely estimated or guessed information. Free LCA science and responsible provision of (applicable) data is possible. Modern LCA universities like TU Berlin, University of Tokyo, University of Stuttgart, and UC Berkeley and others already do "applicable science for LCA" or work on the principle of "Separation of methodology development and LCA application for good science and good application" (Baitz M et. al. 2012).

Industry and business are the main users and providers of LCA data and have maintenance of data on their agenda. Industry and business may consider contributing more into validation and standardization of approaches. Further these stakeholders may communicate more issues and problems of daily application to method developers and data providers. The responsibility of industry and businesses is to facilitate data of their real life supply chains and to feed back into science and industry about issues of practical application in use of data and methods.

CONCLUSION

Synergy of science, industry and politics in LCM is possible. Life Cycle Management can be done responsibly in a co-existence and co-operation of the different stakeholders, if the modular systematic and the related responsibilities are understood and taken (Baitz M, Gabriel R, Betz M, Deimling S (2007).

Continuous improvement cycles concerning LCM in many organizations are already in place or about to be launched. If one would like to play a role as a stakeholder, one should know their responsibility first and take it.

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